

PROPOSAL FOR FLUXNET SYNTHESIS PUBLICATION



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DATASET PROPOSED

LaThuile and Open Access datasets

TITLE OF PAPER AND OUTLINE

Validation of a new multi-layer energy budget scheme in the ORCHIDEE-DOFOCO branch land surface model

Over the past 24 months we have developed a **new multi-layer energy budget scheme** that we would now like to put to the test. For this evaluation, we would like to make use of the detailed data that appears to be available for 12 potential sites, as listed in the section below, during intensive measurement campaign periods. Through application of the model, we aim to achieve: **1. Correct nighttime radiation balance:** Based on the current simulation results, the “single layer energy budget scheme” can typically capture the annual pattern of net radiation (R_n), but has an offset for broadleaved forest sites. These offsets were attributed to the underestimation of the net radiation during the nighttime periods. **2. Correct energy partitioning during winter:** For needleleaved forest sites, the magnitude of simulated sensible heat flux (H) and latent heat flux (LE) does not compare well the observations, although the simulated net radiation (R_n) is reasonably accurate. Our current single layer energy budget performs poorly in terms of partitioning net radiation during the course of a single day during the winter season. **3. Correct ground heat flux prediction:** The simulated incorrect prediction of ground heat flux (G) may be introduced by the spatial separation, in the existing model, between bare soil and vegetation cover (all forests). This separation results in the simulation canopy gaps receiving the full radiation load rather than a more realistic 'shaded' radiation load, as is intended in the new scheme,

PROPOSED SITES TO BE INVOLVED

Boreal Sites:

CA-Oas, CA-Ojp, CA-Obs, FI-Hyy, US-Ha1

Temperate Sites:

FR-LBr, NL-Loo, FR-OHP, FR-Hes, IT-Cpz, IT-Ro1/Ro2, Au-Tum

PROPOSED RULES FOR CO-AUTHORSHIP

The rules, as proposed in the disclaimer for the FLUXNET2007 synthesis, will be applied. People involved in organizing the collection of sub-canopy flux and biometric data, and who provide intellectual input to the paper will be contacted with regards to potential co-authorship of this paper.